

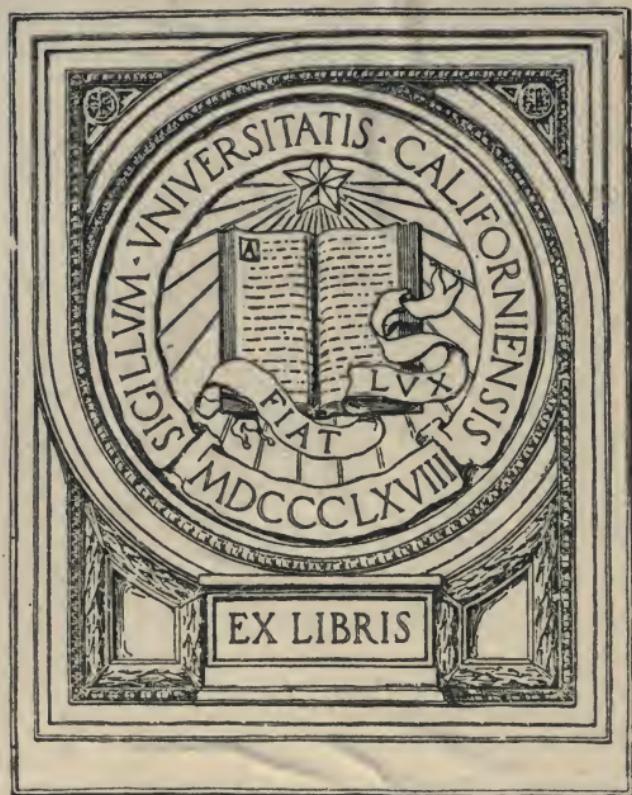
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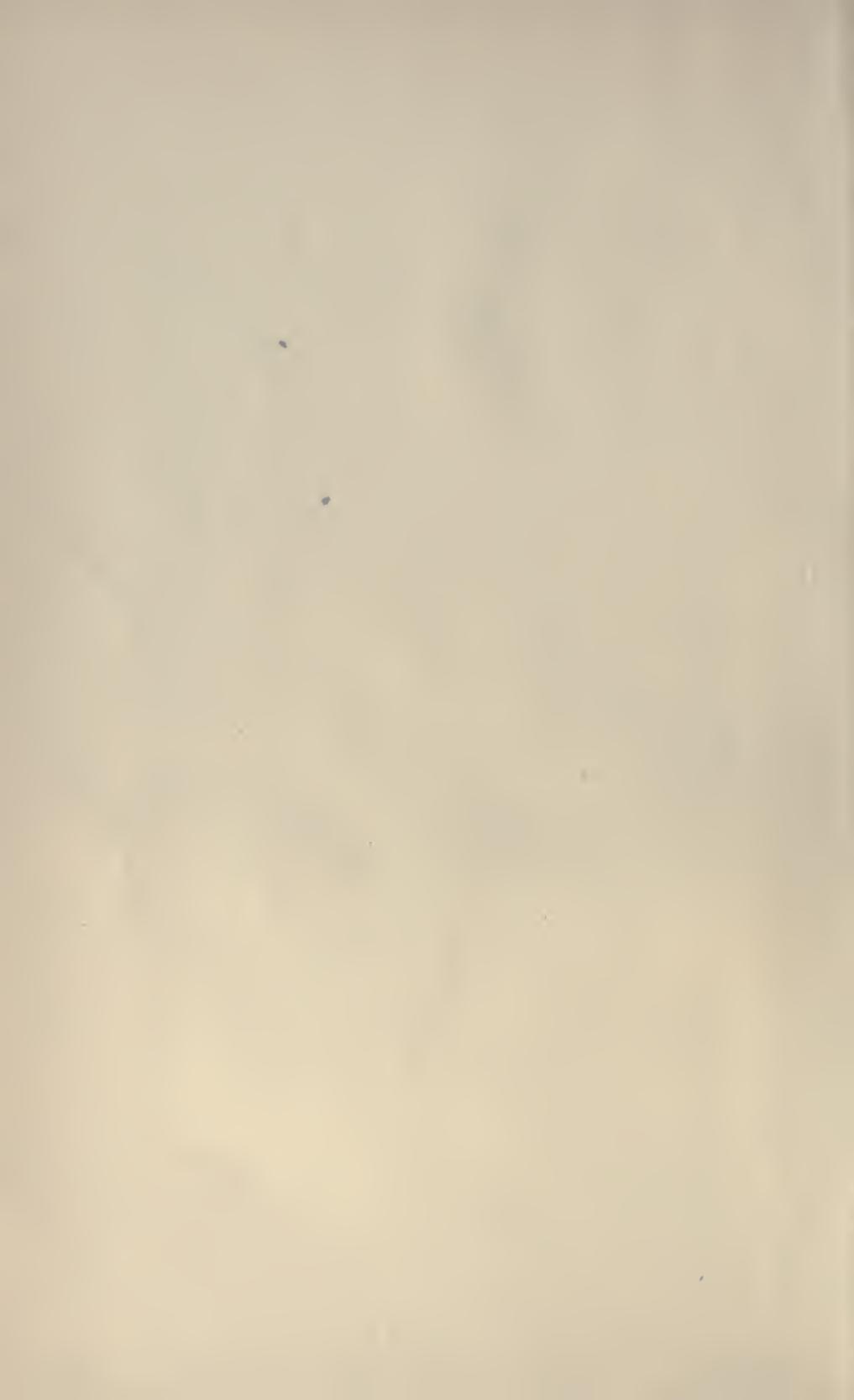
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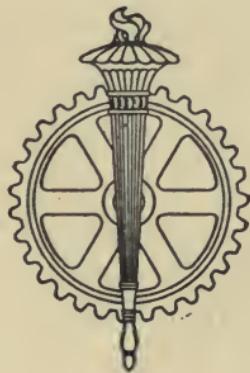
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MODERN ORGANIZATION

AN EXPOSITION OF THE
UNIT SYSTEM

BY
CHARLES DELANO HINE



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MODERN ORGANIZATION

INTRODUCTION

The chapters assembled in this volume appeared originally in The Engineering Magazine as a series of articles which ran from January to July, 1912. They were prepared by Major Hine by invitation of the Editors of the Magazine, as a comprehensive definition of his philosophy of management, ample enough in space and scope to permit a complete unfolding of his doctrine and practice.

That philosophy, as expressed in the unit system of organization directed toward promoting efficiency in operation in one of the great engineering industries, has been applied on a scale of magnitude approached perhaps by but one other example in recent experience. Its success was declared with conviction in specially informed circles; but outside of a rather closely specialized audience, the characteristics of Major Hine's work had not been effectively presented until these articles appeared. The ideas embodied are so fundamental, and so certain to exercise a lasting influence upon the ideals and form of industrial organization, at least in certain fields, that there is patent demand for the assembly of the several parts in a single complete group and their perpetuation in the more permanent form of a bound volume.

The policies advocated are most interesting, because they depend so little upon mechanisms of any kind, so little upon systems affecting rank and file or the equipment and *materiel*, and so much upon

THE MENTAL MANAGEMENT

psychological influences operating first upon and then through the directing official.

They are policies largely of mental suggestion; and mental suggestion must be the final power, the ultimate effective appeal, in any successful philosophy of management, whether the institutions through which that management works be traditional, systematic, or scientific. For mental suggestion creates and transforms the ideals which are the first principle of efficiency, and on mental suggestion depends the attitude of the workers toward any institutions and policies the management may provide.

CHARLES BUXTON GOING.

July, 1912.

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THE UNIT SYSTEM ON THE
HARRIMAN LINES

MODERN ORGANIZATION

CHAPTER I

THE UNIT SYSTEM ON THE HARRIMAN LINES

ORGANIZATION has been termed a smaller sister of sociology, the science of human nature. Industrial organization, including that of transportation and commerce, reflects and typifies in a greater or less degree the sociological development of a people.

Society for centuries has been emerging from political feudalism and despotism. The emergence from industrial feudalism and despotism is coming apace. The first working conception of the corporation was that of government. In the Middle Ages governments were such close corporations that the common people as shareholders had little

voice in the management. Progressive grants of liberty have made their proxies more effective. Since history repeats itself, the modern industrial corporation is passing through stages of development similar to those which have characterized the evolution of the greatest of corporations—governments.

Corporations, like most individuals, acquire money or its equivalent by the economical expenditure of money or effort. It is always easier to expend than to acquire. The problem, therefore, is so to limit expenditure that a satisfactory margin of acquisition may be preserved. This requires the most effective team work on the part of the individuals who compose the officers and employees of the corporation. Organization as a science teaches the art of so uniting and directing these working forces as to produce the most desirable composite effect.

An interesting concrete example of modern scientific organization is furnished by the most extensive railway system in the world, the Union Pacific System-Southern Pacific Company, popularly known as the Harriman Lines. These lines comprise about 18,000 miles of railway extending from

Omaha, Kansas City, and New Orleans on the east to Seattle, Portland, San Francisco, Los Angeles and Mazatlan, Mexico, on the Pacific coast. The gross annual earnings aggregate about \$225,000,000. The pay rolls carry from 80,000 to 100,000 employees. The operating activities of this vast system, including maintenance and new construction, have been controlled since 1904 by Mr. Julius Kruttschnitt with the somewhat awkward title of Director of Maintenance and Operation, awkward and really misleading because it is difficult to conceive of continued successful operation without satisfactory maintenance. The headquarters of Mr. Kruttschnitt, who is known as the von Moltke of transportation, have lately been removed from Chicago to New York in order that he may be in closer touch with his fellow members of the various boards of directors of the constituent corporate properties.

As a result of studies and recommendations made by the writer in 1908 under the direction of Mr. Kruttschnitt, there has been progressively inaugurated during the last three years a unit system of operating organization. The working outline of this organization can best be understood from the

following standard forms of official circulars by which it is promulgated:

..... Rail..... Company

OFFICE OF GENERAL MANAGER

Circular No.....

..... 191...

The following appointments of Assistant General Managers are announced, effective

....., 191...:
1. Mr..... 2. Mr..... 3. Mr.....
4. Mr..... 5. Mr..... 6. Mr.....
7. Mr..... 8. Mr.....

Each of the above named officials continues charged with the responsibilities heretofore devolving upon him and in addition assumes such other duties as may from time to time be assigned.

The titles, "General Superintendent," "Superintendent of Motive Power," "Chief Engineer," "Superintendent of Transportation," "General Store-keeper," "Superintendent of Telegraph" and "Superintendent of Dining Cars," will be retained by the present holders or their successors to such extent only as may be necessary for a proper compliance with laws and existing contracts.

All persons under the jurisdiction of this office will address reports and communications, including replies, intended for the General Manager or for any Assistant General Manager, simply: "Assistant General Manager" (Company telegrams "A. G. M."), no name being used unless intended as personal or

confidential, or to reach an official away from his headquarters.

It is intended that an Assistant General Manager shall be in charge of this office during office hours. Each official transacts business in his own name and no person should sign the name or initials of another.

All persons outside the jurisdiction of this office are requested to address communications, including replies, intended for the General Manager or for any Assistant General Manager, simply: "General Manager.....Co. Bldg.," no name being used unless intended as personal or confidential or to reach an official away from his headquarters.

.....
General Manager.

Approved:

.....
Vice-President.

.....Division

OFFICE OF SUPERINTENDENT

Circular No.

.....191...

Effective this date, this Division discontinues among its officials the use of the titles, Master Mechanic, Division Engineer, Trainmaster, Traveling Engineer and Chief Dispatcher.

The following named officials are designated:

1. Mr. A. B. Assistant Superintendent
2. Mr. C. D. Assistant Superintendent
3. Mr. E. F. Assistant Superintendent
4. Mr. G. H. Assistant Superintendent
5. Mr. I. K. Assistant Superintendent
6. Mr. L. M. Assistant Superintendent

They will be obeyed and respected accordingly.

Each of the above named officials continues charged with the responsibilities heretofore devolving upon him, and in addition assumes such other duties as may from time to time be assigned.

All of the above will be located in the same building with one consolidated office file in common with the Superintendent.

All reports and communications on the Company's business, originating on this division, intended for the Superintendent or for any Assistant Superintendent should be addressed simply "Assistant Superintendent" (telegrams "A. S."), no name being used unless the communication is intended to reach an official away from his headquarters, or to be personal rather than official, in which latter case it will be held unopened for the person addressed. It is intended that an Assistant Superintendent shall always be on duty in charge of the division headquarters offices during office hours. The designation of a particular Assistant Superintendent to handle specified classes of correspondence and telegrams is a matter concerning only this office. Each official transacts business in his own name, and no person should sign the name or initials of another. The principle to guide subordinate officials and employees is to be governed by the latest instructions issued and received.

Train orders will be given over the initials of the

Train Dispatcher on duty, as will messages originated by him.

The modifications of pre-existing organization and methods herein ordered have been carefully worked out to expedite the Company's business by the reduction and simplification of correspondence and records. It is expected and believed that officials and employees will insure a successful outcome by lending their usual intelligent co-operation and hearty support.

Officials and other persons above and outside the jurisdiction of this division are requested to address official communications, intended for the Superintendent or for any Assistant Superintendent, simply: "Superintendent..... Division....." (telegrams "Supt."), without using the name of the Superintendent except for personal matter.

.....
Superintendent.

Approved:

.....
General Manager.

This unit system of organization, first installed in January, 1909, on the Nebraska division of the Union Pacific Railroad at Omaha, is now in successful operation on twenty-seven operating divisions and on six general operating jurisdictions, a total of thirty-three units so organized. On many of these the application of the underlying principles has been consistent and earnest, with

corresponding and gratifying beneficial results. On a few the application has been too timid and perfunctory to secure very perceptible benefits. In no case, however, has evidence materialized of any positive loss of efficiency. There has been in the few cases mentioned a negative neglect to vitalize the latent possibilities of the new system. The personal patience of Mr. Kruttschnitt is as enduring as his official policies are farsighted. Realizing that however sound in principle might be the new organization, its very novelty would excite the opposition of the ultra-conservative, he declined to order its adoption but placed upon me, as his special representative, the duty of gaining official converts to the cause. This peripatetic missionary work has involved traveling some 50,000 miles per year, and holding countless meetings and conferences. So fine is the spirit of official loyalty on the Harriman Lines, so splendid is the personnel, that the fatigues of strenuous travel are forgotten in the pleasant associations and delightful friendships that have resulted. To question motives or to permit honest differences of official opinion to affect personal relations would be to preserve a relic of that semi-bar-

barous feudalism which the new organization seeks to eradicate.

The number of assistant general managers may vary with the size of the jurisdiction, but is normally eight, including the man previously *the* assistant general manager, who to avoid misunderstanding is reappointed as the senior or number one on the new official list.

Thus far the list has not included any superintendents of dining cars as contemplated by the complete plan. Meanwhile it is probable that the title of the superintendent of dining cars will be changed to "chief commissary" to avoid confusing him, the head of a department covering the whole road, from the division superintendent covering only one division.

The number of assistant superintendents on an operating division varies from one on a very small division to twelve on one very large division. The normal number is six, including the man previously *the* assistant superintendent, who to avoid misunderstanding is reappointed as the senior or number one on the new list. It is now desired to increase this normal number to eight by taking in the division storekeeper, as has been done

on one division, and the station inspector or division agent.

A district comprising two or more divisions and under a general superintendent, is a more or less incomplete unit sometimes created intermediate between a general manager's property and a superintendent's operating division. This is organized under the unit system by following the form of circular for the general manager's office, *mutatis mutandis*, and appointing two or more assistant general superintendents, the normal number being three.

OPERATION OF THE UNIT SYSTEM

CHAPTER II

OPERATION OF THE UNIT SYSTEM

ANY study of the underlying principles of the unit system must take into account a most distinctive characteristic of a railway, namely, its physical extent. The head of a manufacturing plant, of a bank, or of a department store, could in a few hours' time personally see every employee of the establishment and observe most of the constituent activities. After a railway once begins business no division superintendent even can hope ever to see all of his trains assembled or all of his employees congregated in one place. So few can come to him that he must go to them. This results in an anomalous condition. While the superintendent or other official is on the road, the routine business at headquarters must be transacted or the company's interests will suffer. Under a feudal conception that because the superintendent is an official he can be in at least two places at the same time, it is the custom on most railways to have the chief clerk at head-

quarters sign the name of the absent superintendent to official communications. This dishonest violation of the fundamental laws of matter is supported by the same subtle arguments, the same legal fictions, with which the learned men of the Middle Ages sought to bolster up the untenable conception of feudal authority. As a government of laws replaces a government of men, so must what is known as "government by chief clerks" be eradicated from corporate administration. When the superintendent is absent from headquarters the chief clerk perforce handles communications to such subordinate officials as the master mechanic, the division engineer, the trainmaster, etc., officers all receiving larger salaries than the untitled chief clerk and presumably men of wider experience and better qualifications than he. Sooner or later every chief clerk oversteps the tenuous line and in the name of routine business is consciously or unconsciously restricting the authority or activity of those who are in reality his official superiors. Here comes in an amiable failing of human nature, against which it is the province of organization as a science to impose a check. Every official flatters himself: "My

chief clerk never does that. He knows me too well and appreciates my unwillingness to stand for such things."

It is an interesting fact that the official who is most zealous in defending his own chief clerk is often the one quickest to squirm under the acid test of an inquiry as to the sense of proportion maintained by the chief clerk of the official next above. Singularly enough, promote the official to the position higher up, make the offending chief clerk his own, and the assuming marplot becomes a model of discerning judgment. The conclusion is obvious that such an universal state of affairs must indicate the viciousness of a fallacious system rather than the shortcomings of a particular set of individuals.

The unit system of organization eliminates "government by chief clerks" by insisting that no person shall sign the name or initials of another. A man's name is his birthright, as his signature is his patent of enlightened manhood. The underlying sociological principle is that the individual is the indivisible unit of society. Since the business must go on and no person may sign for another, it follows that a sufficient number of duly qualified officers must be appointed. By giving

all the uniform title of assistant this or that, every one is available for prompt comprehensive action should occasion so require. An attempt at description in a title may be too restrictive by inferentially debarring all features not specifically included. In dealing with human nature a reasonable degree of elasticity is preferable to that rigidity which is often so essential in treating material things. Engineers from familiarity with working applications of the laws of matter often unconsciously impose too rigid requirements upon society. Engineers who design and construct public utilities must study the psychology of the crowd.

Apart from the basic objection to the chief-clerk system is the practical disadvantage of having outside matters decided and acted upon by a man whose experience has usually been limited to the inside of an office. This lack of sympathetic viewpoint with the difficulties of outside problems is often the cause of unnecessary expense on the outside. The sailor at sea, the traveling salesman on the road, the soldier in the field, the railroad man on the line, all have their troubles with the man in the office. Human nature is the same whether engaged in navigating the ocean,

selling goods, making campaigns, or producing transportation. The unit system minimizes the undesirable features of the necessary partial control from a central office by insisting that such inside direction shall be exercised only by officials duly qualified by outside experience.

This requirement is worked out in practice by having normally at headquarters the senior assistant, who is in effect though not in name the chief of staff. At the headquarters of an operating division he is, as stated, the man who was previously to reorganization *the* assistant superintendent of the division. The former chief train dispatcher of the division is usually started near the foot of the list of assistants. His duties are unchanged and he remains at headquarters handling such endless details of operation as directing the work of train dispatchers and telegraph and telephone operators, assigning locomotives, distributing cars, manning trains; in fact, he is the incarnation of detailed administrative activity. At a normal division headquarters, then, there are two assistant superintendents on duty, one as chief of staff, the other as chief dispatcher, one the senior and the other a junior, one a distinct

head of the office, the other in effect his senior's aide. Both assistants being clothed with authority, either can act on any problem that may suddenly develop in an unforeseen absence of the other. On divisions of very light traffic one assistant at headquarters may be sufficient.

No distinct grade of senior or chief assistant is created in any unit. Normally number one, the real senior, is "on the lid," as it is termed, at headquarters, and is excused from outside road duties. In case of his prolonged absence, the head of the unit, the general manager, or the superintendent, as the case may be, designates the most available of the other assistants to remain at headquarters and sit on the lid. An unwritten law here operates to make such designated assistant the chief or senior of all the others for the time being. No formal announcement of such designation is necessary. A railroad does not change its physical location frequently, as does a fleet or an army, and the chance of confusion of relative rank is remote. Advantage is taken of this elastic feature of assignment on some divisions to rotate various assistants through the senior chair in order to gain the splendid compreh-

hensive training for higher positions which the position affords. Assistants thus favored are unanimous in expressions of appreciation for the valuable knowledge and experience acquired.

The feature of consolidating office records in one common file is taken from the civil courts. At a city hall or a court house there may be a dozen judges occupying the benches of the various courts, but there is normally only one clerk of the court, with the necessary deputies, one office of record for all. When one judge wishes to know what another judge has done he does not write a letter and open up a file, as does frequently one corporation official across the hall from another. No, the judge sends to the clerk's office and gets the complete record in the case. Under the unit system the official sends to the file room for all the papers. The consolidated file is perhaps the most universally popular feature of the unit system. It is estimated that its introduction in the operating department of the Harriman Lines has thus far resulted in the elimination of over half a million letters per year. These unnecessary letters were harmful rather than helpful since they retarded administration.

Often by attempting to think for the other man they dwarfed individual initiative.

Each assistant when at headquarters signs communications to subordinates in that branch of work in which he is technically expert and for which he is held responsible by the head of the unit. For example, the maintenance assistant superintendent issues instructions to his roadmasters or track supervisors; the mechanical assistant to his engine-house foremen or car-repair foremen; the transportation assistant to his yardmasters, etc., etc. Each, however, after signing is supposed to send his communication over the desk of the senior assistant, both for the latter's information and for review and co-ordination. This has proved a valuable check upon official caprice in issuing unnecessary instructions. More energy is now expended in seeing that instructions already issued are carried out, and less in promulgating those that in themselves may unconsciously confess a laxity in previous enforcement. It is obvious that under this system the senior assistant has a most comprehensive knowledge of the affairs of the unit. The head and the other assistants come and go between the road and the office. The

senior assistant has a practical grasp of operation that enables him to aid the head of the unit in balancing its component elements, in minimizing departmental jealousies, and in engendering a spirit of team work. The consolidated file is helpful in producing a get-together feeling.

When the head of the unit or any assistant is on the road, he is represented at headquarters not by a chief clerk but by a chief of staff, the senior assistant, who transacts business in his own name. This somewhat elaborate covering of headquarters results as intended in more traveling and in better outside supervision by the other assistants. Their increased availability for outside work is the strongest of the several strong features of the system, and will be more fully discussed in the next chapter.

BROADENING THE IDEALS OF LINE SUPERVISION

CHAPTER III

BROADENING THE IDEALS OF LINE SUPERVISION

ON most railways, if the division engineer, while riding on the rear of the train to inspect track, should tell the young flagman that the latter had not gone back far enough to protect the train, friction might result.

If the flagman, mayhap of brief service and little experience, did not tell the division engineer, an old and tried officer, to go to blazes, the trainmaster perhaps would do so. The feudal notion "you have interfered with my man" would prevail, rather than the broader concept of the best interests of the company and the public. Let the division engineer invoke the more formal procedure of reporting the flagman. The trainmaster might take such action as an implied reflection upon his own efficiency, and unconsciously constitute himself attorney for the defense. The papers would grind through the official baskets, and perhaps weeks later return to the division engineer in such man-

ner as by inference to discredit his judgment. The natural effect is for the division engineer to lose interest in the efficiency of flagmen and to confine his attention to his own specialized activity. His salary and expense account continue undiminished, and the company and the public lose just so much of his possible efficiency.

Under the unit system of organization, the old division engineer is an assistant superintendent. Unrestricted by the limitations of a descriptive title, the presumption is in his favor rather than in that of an inexperienced employee. For the bundle of letters resulting from a written report, which are in the nature of a technical appeal to higher authority, there is substituted a man to man contact, the rough and ready justice of the police court, which is usually a pretty good brand of justice. Were the division officials a set of callow youths with immature judgment an undesirable condition might result. Fault finding and nagging might replace the comprehensive supervision that is desired. No such effect, however, has been encountered. The officials concerned have shown themselves possessed of that poise which is to be expected from years of experience in

directing their fellow men. So far from uniformity of titles producing a conflict of authority, the result has been the opposite. The difficulty on the Harriman Lines has been rather in getting the officials to interest themselves along broader lines of activity. It is much better that the departure from the ideal should be in this direction, since no fatality to the general scheme is involved. The broadened usefulness must be a matter of gradual development. It was recognized in the beginning that maximum improvement could be obtained only with a new generation of officials. Experience, however, has vindicated the wisdom of making a comprehensive start and securing whatever gain may be practicable. Perhaps the most creditable feature of the installation of the new system is the fact that results have been obtained with the official talent at hand. No importations of enthusiasts and no infusion of fresh blood have been found necessary. The good old wheel-horses have shown their ability to move somewhat faster when the way is made easier; when the ruts of narrowing specialties and the hurdles of departmental prejudices have been removed. The changes have thus been made without demoralizing the

service. This consideration for the individuals concerned has increased rather than decreased the *esprit de corps*.

Under the old order of things, if a train happened to arrive late with the master mechanic on board, he would be interested only in knowing that the locomotive and equipment were in good shape; that the engineers, firemen, and car inspectors had performed their duties properly. Whether or not the conductor had been slow in going for orders at each telegraph office; whether or not the train dispatcher had used poor judgment; whether or not station forces had been alert in handling train baggage; whether or not there had been team work as between train men and engine men, would be questions of little moment to the master mechanic. In fact, if interrogated on the subject his tendency would be to minimize the shortcomings of the mechanical activities by emphasizing the derelictions of the other employees. He became unconsciously a breeder of friction. As an assistant superintendent, he can be held responsible for a judicious enforcement of all regulations, for an almost unconscious development of harmonious efforts on the part of all concerned. The more easily

that he produces this composite efficiency, the more fully does he meet the test of his own capacity for true leadership. That traditional horse which the world has been leading to water, will, with proper handling, be drinking before he has time to realize the impossibility of such desirable consummation being enforced.

Again, the old trainmaster, now an assistant superintendent, after an all night chaperonage of a freight train, may pull up at a water tank at 7:15 A. M. If by chance he then observes a section gang beginning to think about going to work, he need not, and does not, because of being an assistant superintendent, read the riot act to the belated section foreman. A considerate inquiry as to "what are your working hours?" or "what time does the roadmaster (or track supervisor) expect you to turn out in the morning?" is all that may be necessary. There may be a good reason for the seeming departure from normal conditions. The presumption must be in favor of the faithful old employee. The moral effect of the official inquiry, if considerately made, will be far reaching.

The examples cited from actual practice

indicate the extreme difficulty of adequate supervision of so extensive a plant as a railway. They also illustrate the necessity for that human touch which alone can restore that feeling of individual responsibility which is so vital for the successful administration of the modern corporation. All normal men have an inherent respect for duly constituted authority. This natural feeling of respect is alienated when authority is exercised at long range by untrained office meddlers. It borders on the cowardly to ascribe to the labor unions alone the responsibility for decreased efficiency. The educated and *entrepreneur* class, the elder brothers of society and industry, have the larger measure of responsibility. The unit system of organization substitutes, for the pink-tea contact of the typewriter and the telephone, the strong coffee of the caboose and the ham-and-egg association of the dinner bucket.

Superficial critics of the unit system have deplored the elimination of distinctive titles. They claim that a man loses his identity as an engineer, for example, that he cannot hope to acquire standing in his chosen profession. The answer to this is that great industrial corporations create professions of their own.

The whole is greater than any of its parts. A man qualified to be an administrative official of a large corporation is directing an activity greater than any such component as civil engineering, mechanical engineering, electrical engineering, etc. If his ambition is for distinction in any of these honorable branches alone, he should seek general practice and not make the service of any particular corporation his life-work. Military rank has not prevented certain engineers and surgeons of the Army and Navy from acquiring distinction in their technical specialties. On the contrary, the prestige of permanent status in an all-including profession creates a presumption most helpful in securing prompt recognition of specialized technique. In the immortal words attributed to the father of the railway profession, George Stephenson, the greatest branch of engineering is the engineering of men.

OVER-SPECIALIZATION

CHAPTER IV

OVER-SPECIALIZATION

THE increasing difficulty of securing men to fill the higher official positions in large corporations is due mainly to over-specialization. The line of least resistance has proved too tempting. Emerson says that we are all as lazy as we dare to be. A manifestation of unconscious laziness may be the habit, bred by specialization, of side-stepping complete responsibility by passing the question to another specialist. The great problem in organization is to develop, under modern conditions, the old-time feeling of individual responsibility.

A man whose mental tendency is to meet responsibilities squarely must perforce acquire knowledge of more than one thing. Such acquisition broadens his concept, increases his confidence, and should delight his superiors. Where highly specialized departments are created, departmental jealousies may normally be expected. Loyalty is measured by devotion to the department rather

than to the corporation. Not only is there a negative lack of incentive in learning the work of another department, but there is positive objection to crossing sacred departmental lines. Since owing to the size of the proposition departments are necessary, the problem is to develop the all-round man under such restrictive conditions. One remedy, often difficult of application, is the rotation of selected individuals from one department to another. Another is a sufficiently early elevation of individuals to positions which have dealings with all departments. The latter method, by no means ideal, depends entirely upon the ability and the responsiveness of the individual promoted. In any case, the problem is easier where the number of departments is minimized. Specialization running rampant is often responsible for the creation of unnecessary departments. A striking example is the tendency of corporations to exaggerate the importance of such component functions as accounting, supply and purchase.

Large corporations (including governments, the largest of all) early discover the necessity for a cadet system of training competent officers. This simplifies the problem,

since talent can be caught young enough for the broadest development. A cadet system may fall short if post-graduate activities are too highly specialized for too long a period of time. The railways and other industrial corporations are many of them too young, as corporate entities, to have developed as yet a cadet system. As shown by the practical experience of the Harriman Lines, some men old enough to have attained official rank can nevertheless be broadened for the highest positions by a proper system of organization. The amalgamation of the steam engineers with the line of the United States Navy is another notable example. That not all old dogs can be taught new tricks is no reason for denying opportunity to those who can. Every new trick the dog learns becomes an asset of value to his master. Beyond an easily determined point of self-respect it should not be what the dog wants, but what the master needs. The Nineteenth Century in the name of specialization badly over-specialized. The problem of the Twentieth Century is to swing back to a balanced specialization. All of us believe in specialization. Where we differ is as to the point where logical specialization ends and over-

specialization begins. The corollary of specialization is centralization.* The corollary of over-specialization is over-centralization. The more highly specialized the activity, the more remote becomes the point of convergence of complete authority.

Organization as a science demands a check against the amiable failing of human nature to exaggerate the importance of its own specialty. *Æsop* caught the idea in his fable of the quarrel among the organs of the body as to their relative importance. Each is useless when alone. Each derives its importance from its relation to the others. Perhaps the best practical check against corporate over-specialization is the rotation of functions. The best farmers rotate their crops. Where man is most active and useful, Nature rotates her seasons. Biology teaches that death comes more quickly where rotation is absent.

Like all other good things, rotation can easily be overdone. The permanent specialist may be justified when he has demonstrated his fitness as an all-round man. He

* Manifestly, Major Hine refers to centralization of control over functional activities—to concentration of administrative power—and not to mere social centralization, as of individuals in cities or of labor in large industrial or operating organizations.—THE EDITOR.

can best learn everything of something when he has first learned something of everything. Epochs in the advance of society are all marked by cosmic tendencies. Modern specialization had its birth in the necessities imposed by the wonderful achievements of the Nineteenth Century. Invention cleaved its way through the ranks of civilization and scattered complete organizations of local society into groups of specialized activities. Many men mistake the immediate for the ultimate. There was a disposition to regard this condition as permanent. The inventor and the engineer, men of tangible things, outstripped the philosopher and the sociologist, men of intangible things. As society catches its own breath it demands more even running from its leaders.

✓ As specialization produces centralization, so in turn centralization develops bureaucratic administration. The specialist who derived his official existence from expert knowledge carefully acquired may soon lose his sense of proportion. He unconsciously drifts into feeling that any one in his department must be an expert because the head is an expert. Thus we find the chief engineer insisting that technical matters should be

handled by his department alone. Investigation may develop that such handling is turned over to a non-technical man, the chief clerk, for final action. The chief engineer feels, unconsciously of course, that even a layman, if so fortunate as to be associated with the head, must absorb both technical knowledge and divine afflatus from such contact. Unquestionably, the best experts are those who can impart a working knowledge to the layman. The objection to the chief-clerk system is that a half-way condition is stretched into doing duty for what should be a complete proposition. If the matter in hand is so highly technical as to demand an expert, the administrative activity should not be delegated to a layman. If, on the other hand, it has reached the stage of administrative routine, it makes for more comprehensive and harmonious results to have action taken by a duly qualified officer.

Society has so far emerged from feudalism, politically speaking, that a stenographer would no more think of taking the place of a judge on the bench than a lay reader would think of attempting all the functions of a duly ordained clergyman. Organized society, however, as reflected through modern corpora-

tions, is so steeped in feudalism that the stenographer may be habitually signing the name of the corporate officer. It is an echo of the mediæval period when the feudal lord was considered omnipresent within his dominions even though he might be absent on a crusade to the Holy Land.

When one person signs the name of another the effect produced is not that of either one or the other, but of a fraction of both—an undesirable sociological condition. Collectivism and altruism, as indispensable blessings of modern society, fall short if the individual is not preserved as an indivisible unit. Such violations of principle were less material when society was organized into smaller groups. The advent of the modern corporation necessitates, in administrative life, the same relative checks and balances for the preservation of the identity and responsibility of the individual as have been imposed by constitutional limitations and otherwise in political life. Thus when business was carried on by a family or a partnership it mattered comparatively little if one person signed for another, since the mutual understanding was so thorough and complete, or because each of the persons con-

cerned was a part owner. In the administration of a large corporation, however, the officers and employees are trustees in varying degrees of rank. When an officer is absent, actually or constructively, the person who acts does not represent the absent officer but the corporation. If Richard Roe acts in the absence of John Doe, a corporation officer, the signature should not be "John Doe, per Richard Roe;" but should be "Richard Roe for and in the absence of John Doe." The explanatory phrase "for and in the absence of" is largely a question of good manners. It explains the seeming presumption of Richard Roe in acting, and the apparent courtesy or neglect of John Doe to give the matter personal attention. The point of it all is that Richard Roe is acting for the corporation. He has been thrown into administrative gear, more or less automatically as the arrangement for succession in authority is elastic or rigid.

The science of organization insists that chains of authority and lines of succession shall be carefully outlined. The ideal condition would be, after developing competent men, to have the same men continuously doing the same work. This condition of spe-

cialization is manifestly unattainable owing to the wear and tear on individuals and to the accidents of service. Specialization in assignment has therefore decided limitations. Wise organizers recognize this fact and provide sufficient officers to give comprehensive action under all conditions of service. Unwise organizers fool themselves into believing that by some hocus pocus a half-baked understudy can perform a complete part.

Under the more primitive conditions of the past there has been less necessity for a knowledge of the science of organization. Supply follows demand, and the practical necessity for this knowledge is attracting the attention of thinking men the world over. Administration as an art is very old. Organization as a science is very new. There are a hundred good administrators for every good organizer. That which often passes for good organization is high-class administration, through splendid personal equations, of what is in fact unscientific organization.

One bar to progress is the fact that nearly every man intrusted with authority over his fellows flatters himself that he is a born organizer. Flattery is never more deceptive than when applied to one's self.

FALLACIES OF ACCOUNTING

CHAPTER V

FALLACIES OF ACCOUNTING

SO rapid has been the growth of modern industry, so extensive is the volume of activity, so imperative is the necessity for a check of some kind against extravagance and corruption, that accounting as a function has assumed an importance far beyond its true proportion.

Accounts are, in fact, but a measure of performance, not performance itself. Accounts are but a yardstick. So prone is human nature to mistake incidentals for essentials that through long use the yardstick acquires a fictitious value. Experience, up to the period of obsolescence, ripens the human being and increases his efficiency. The yardstick, however, like most inanimate things, after being once properly tested is none the better for having made ten-thousand measurements. This failure to distinguish between the animate and the inanimate finds extensive expression in the interior organization of modern society.

The accountant attempts to tell us that money has been legally and honestly expended. He is usually powerless to say whether or not the expenditure has been efficient and therefore economical. Any one can make vouchers match and columns balance if he fudges long enough. It is not every one, however, who can organize and direct the divine forces of nature, divine because they are human. At the outset too often the engineer of men finds himself handicapped by the purveyor of figures. Efficiency too often is measured by book balances and statistical reports rather than by expert inspection of actual conditions and performances.

Class consciousness is as expensive industrially as it is undesirable sociologically. The accountant, being human, exaggerates his own specialty, and gets away with the proposition because the director of men and things may scorn to meet the accountant with the latter's weapons. Organization as a science demands that the two get together, not in combat, but in co-operation. When he wakes up, the technical director has all the advantage. He can learn accounts much more easily than the accountant can acquire technical knowledge. A concrete application of

this principle is found on some railways, including the Harriman Lines and the Pennsylvania System. There, the disbursement accounts are kept by geographical operating division under the direction of the responsible operating officer, the division superintendent. The underlying theory is that accounts as part of every-day working tools should be available first hand for prompt and effective measure of performance; that it is manifestly unfair to expect to hold officers responsible for results and at the same time deny them first-hand knowledge of existing conditions. On most railways and in many other large industrial corporations, accounting is regarded as a sacred mystery beyond the ken of the every-day operating man. The result of such illogical specialization is reflected in a remote centralization of function. The scorer is too far from the game. Individual batting averages acquire a greater relative value than sacrifice hits which may bring in winning runs.

One of the reasons that banks enjoy the general confidence of the public is because of their highly localized operation. The greatest financial institutions work only through more or less individualized corre-

spondents. Each bank is made a complete, self-contained unit under a president or manager, who controls directly and completely his bookkeepers. If banks had fallen into the fallacy of the industrial world, all the bookkeepers would report to a head bookkeeper in a distant city and all the janitors to an alleged expert chief janitor somewhere else. Much of the local feeling of distrust against the American Telephone and Telegraph Company and its later subsidiary, the Western Union, is traceable to the fact that in few cities is there a recognized head of the company. The work is divided up amongst specialists, who for a time, by increased and intense attention to certain details, are able to show high departmental performance. Complaints of one sort or another may be met with the statement that some other department is responsible. The dissatisfaction of the public sooner or later finds expression in a demand for increased regulation of rates or public supervision of service through commissions or otherwise. A corporation as an artificial person suffers enough lost motion from lack of inherent red blood without further emphasizing its vulnerability by a conscious or unconscious shifting of

responsibility through mistaken notions of the proper division of labor. By all means there must be some division. Where the efficiency doctors disagree is mainly as to the point of complete convergence of activity and authority.

It is a far cry from the old-time watchmaker, who wrought every part himself, to the factory operative who knows one machine turning out a very limited portion of the works of the finished watch. Were the making of watches the chief end of man, the highly segregated activity would be ideal. There are so many other things requisite, however, to insure life, liberty and the pursuit of happiness, that true composite efficiency demands, at least, such rotation of function as will prevent the dwarfing of individual development.

Corporations, like society in general, cannot stand still. They must and do advance. The sins of ignorance in one generation find absolution in the more enlightened practices of the next. It is predicted that ere long corporations will so see the light as to reduce accounting to its proper position. Accounting is one of several components of operation, not an independent function in itself.

Too often confusion comes from calling the accountant an auditor. The accountant should be a registrar, the auditor a reviewer or inspector. Here is a distinct differentiation of function. Constructive criticism and review have a distinct function. He who criticises or reviews, be he ever so honest, must be able to suggest practicable improvement, otherwise his criticism degenerates into harmful carping. It follows, therefore, that the inspector must be an expert operator. Audit is one of several components of a broader activity, inspection. The fundamental defect in many modern corporations is in endeavoring to make the accountant an auditor, to check the books before they are made up. This results in one-sided development and more or less unconscious fudging of operation to meet rigid preconceived notions of accounting requirements. Patrons would soon leave in disgust a bank whose teller had his efficiency measured by the bookkeepers farther back from the counter. The teller of necessity relies upon the record of the bookkeeper to protect the bank against the mistakes or designs of the customer. In a small bank one may be both teller and bookkeeper. Later on the work is divided, not because the

bookkeeper is considered more honest than the teller, but because there is more work than one man can do and there is a self-suggesting division of labor. The underlying principle is that volume of activity rather than importance of function defines planes of cleavage in the division of labor. Frequently this basic principle is forgotten and class consciousness encourages the belief that segregated activity derives its existence from highly technical knowledge. Organization as a science has a hard task to overcome by proper checks and balances this feeling of "we are so different" and "our work is very expert and peculiar."

The problem mentioned is receiving a practical solution in a variety of ways. The primal instinct of self preservation is prompting engineers to learn more and more of accounting. Some of the large New York firms of efficiency and production engineers are developing accountants from young engineers. Whether or not the accountant of the future is an engineer, it is certain that the engineer will be an accountant. Where the public accountant leaves off and the muck-raker steps in saying that something is wrong, the efficiency or production engineer

stands fast and produces improvement. A prerequisite to a knowledge of physical engineering is a grounding in mathematical conceptions far beyond those necessary to cover every phase of financial accounting.

The accountant begins by flattering himself that because entrusted with records of financial transactions, he is more honest than the common run of people who deal with men and things rather than with money. By an easy process of extension this idea is developed into a belief that all the employees connected with the accounting department are perforce of a superior degree of integrity. Apart from the baneful subjective effect of so absurd a fallacy is the objective resultant. Robbed of part of his working tools, denied by inference the fundamental requisite of integrity, the operating man sub-consciously acquires an attitude of defence or of indifference. In either case there is a distinct loss of composite efficiency through failure of the organization to co-ordinate properly all the human elements engaged in the particular activity. There results a condition of having a junior clerk in a distant office question 'the acts of a highly paid officer on the ground. The presumption should be in favor of the

latter, but because efficiency is necessarily relative and intangible, the clerk has a decided advantage of position because he measures performance from his little viewpoint with a seemingly tangible report and an apparently effective unit of comparison. This undesirable condition is highly typified in the administration of the United States Government where hundreds of clerks in the accounting bureaus of the Treasury Department at Washington, under a false conception of revenue protection, unconsciously hamper the performance of upright and zealous officers and employees hundreds or thousands of miles away. The Bureau of Insular Affairs in the War Department is in advance of many others in employing in the Philippine Islands numerous traveling auditors. As a broad proposition, the inspector should seek necessary data of audit on the ground rather than have such data seek him in a distant office. It is predicted that the corporation of the future, and government is the largest of all corporations, will develop for its inspection service, including auditing, a corps of high-class men, composites of the inspecting officer of the army, the National bank examiner, and the traveling railroad

auditor. At first, probably, such corps will be a set of more or less permanent specialists with the intuitive faculties highly trained. Since history repeats itself in organization as elsewhere, the gradual evolution in industry will be, as shown by the experience of the ages in armies and navies, to insist upon periodical rotation between the staff duties of inspection and the line functions of performance. The mistake made by many corporation officers is in believing that in all such matters the ultimate has been reached. Since all life is evolution, the wise man recognizes the fact that attainment of the ultimate must extinguish existence as surely as the variable of mathematics would be wiped out if its limit could be reached.

Money itself, a measure of value, is but a symbol and a representative, and never performance itself. Because money brings position, power, and influence it is often confused with the result it produces. When in a more primitive state of society a few individuals were exploited at the expense of the many, the glamor of disproportionate individuality often obscured the fallacy of considering money or property as the primal cause of pre-eminence. When such unbal-

anced individualism yields to more rational collectivism, as reflected through the modern corporate organization of society, money and money accounts very properly lose in relative value.

The present social unrest flows not so much from dissatisfaction with the unequal distribution of wealth as from disappointment at the failure of its possessors to measure up to higher conceptions of stewardship. The people insist upon a regulation of wealth, and particularly upon a regulation of its uses through public-service corporations and other industrial enterprises. The struggle for adjustment now going on in the United States is but a manifestation of a larger cosmic tendency toward equality. The problem in the United States is intensified by reason of the fact that under our theory of government political power is more or less decentralized. The tendency has been toward more and more political and governmental centralization in Washington. All the while financial power is becoming more highly centralized in New York. Much time will be needed for harmonizing these dissimilar conditions. In Europe, the political and the financial capitals are usually identical as seats of central-

ized power. It is interesting to conjecture the effect upon present conditions had a strong Federalist party been in power during the thirties, forties and fifties, a period of important railway and industrial development. The States Rights party then in power frowned down upon the notion of federal control of railways when their similarity to rivers and canals was mentioned. With so many disproportionate conditions it is little wonder that corporations err on the side of unbalanced organization. Pioneers of thought may point the way, but consummation of scientific ideals in organization becomes fully practicable only when conditions are so acute that the necessity for remedies is self-evident, and the method of solution more or less self-suggesting to the masses of those concerned in the results.

SUPPLIES AND PURCHASES

CHAPTER VI

SUPPLIES AND PURCHASES

PURCHASING, as carried on by most modern corporations, is an example of exaggerated specialization of function. Purchasing is merely a component of a larger activity, supply. In turn, supply is a part of operation. A failure to appreciate this component relation often results in distorted and unbalanced administration. A strong personality at the head of a purchasing department may unconsciously hamper the efforts of heads of other departments through a failure to appreciate the proportionate value of supply and purchase to operation. Purchasing was originally segregated not necessarily because it was so different from everything else, but rather on account of the volume of the activity having reached a stage where it justified the undivided attention of one person. Such person, being only human, gradually acquired a habit of mind of considering himself as something apart from those less skilled in

the technique of bargaining. Where all heads of departments are closely associated in a restricted area, as in that of a single manufacturing plant, daily personal touch is a wholesome antidote for this "we are so different" feeling. The trouble begins when several plants are associated under a single management more or less remote. It is then that the acute separation of function is defined by thicker and thicker department walls. What was originally a mathematical plane without thickness, becomes first a wall and then a fortification.

Tradition says that in 1861 it was intimated to the veteran, General Winfield Scott, that he who had entered the City of Mexico so successfully in 1847, should have no great difficulty in capturing Richmond. General Scott replied in effect that many of the same able officers who helped him to get into the City of Mexico were engaged in keeping him out of the city of Richmond. So it is in a large corporation. The same people who in the days of small things are engaged in helping the head to enter every possible avenue of composite efficiency, are, as the enterprise grows, more or less unconsciously in rebellion to keep their sometime

allies from entering the citadel of what, through segregation, has become a sacred cause. It cannot be repeated too often that the solution of the problem lies in the earliest practicable convergence of complete authority covering the entire activity. No exact solution is possible because the focal distance of the individuals concerned is too variable. The most hopeful sign of the times is the willingness of the leaders of industrial operation to discuss the subject. Dogmatic generalizations, induced usually from too few particulars, are giving way to a feeling of doubt as to final conclusions. True science, and organization is a science, ever finds its vindication in calm and dispassionate investigation.

An illuminating example of centralized control and decentralized activity is afforded by the purchasing bureaus of the Harriman Lines. The able director of purchases, Mr. W. V. S. Thorne, in New York, makes blanket contracts, when practicable, for such material and supplies as can be most economically purchased *en bloc* for all the railways constituting the Associated Lines. For example, locomotives, cars, steel rails, car wheels, bridges, etc., etc., will usually fall

under this class. Each of the constituent properties has its own purchasing agent who, when acquiring standard articles under the blanket contracts mentioned, becomes an ordering agent. On the other hand the purchasing agent of the Union Pacific Railroad of Omaha can probably drive a better bargain locally for such supplies as ties, timber, shovels, brooms, etc., etc. The point of it all is that the policy of centralization is sufficiently elastic to permit discriminating thought by responsible officers. Too much centralization always dwarfs the initiative of the man on the ground by inferentially denying him the ability to discriminate. In brief, an attempt is made by primary organization to decide a majority of the questions in advance, a hopeless proposition. It is predicted that the supply and purchase administration of the Harriman Lines will be further decentralized, so that perhaps the division superintendent can buy to advantage certain of his supplies in local markets or jobbing centres. Most railways and many industrial corporations reason fallaciously that because some things can best be purchased from a centralized office, hence all things should be so purchased. The Harri-

man Lines' reasoning is that experience must be the guide, that some things must be purchased under one method and some under another. Typical of the other view is the Santa Fé System whose officers complain that the allotted three-score years and ten are too brief a span for the countless transitions of requisitions, and supply correspondence, between the great West and distant Chicago.

Could one man do all the buying and insure prompt action and delivery, the segregation of purchasing would be ideal. Soon, however, the purchasing agent gathers around him a large office force entirely unsympathetic with the particular needs of the users of the material and supplies. The office becomes unwieldy and deals with papers and accounts rather than with men and things. The office employee of limited experience may have a greater voice in the management than the experienced officer charged with the largest outside responsibilities. The purchasing agent boasts that his bright assistant saved the company *a* dollars by continued correspondence with certain firms. Meantime the company may have lost *xa* dollars because men were working to poor ad-

vantage while awaiting proper tools and material.

Requisitions may be counted a necessary evil to be reduced to the lowest possible terms. Ideal supply would be automatic. Too often a requisition tells a distant office only what it should already have known. The largest single item of supply on a railway, fuel for locomotives, is furnished without regular requisition because the necessities are so apparent. A definite amount of fuel is shipped periodically in the absence of requests for variation in quantity. As administration improves and official ideas broaden, more commodities will be included in the list. A start has been made by numerous railways by running monthly supply cars to issue station and track supplies to agents and section foremen. Most of these roads persist in the foolish practice of sending worthless requisitions with these cars, worthless because the responsible officer with the cars should decide on the ground the amount to be issued in each case. An estimate of the probable total requirements can be made with sufficient practical accuracy for stocking the cars for the trip. Apart from the wasted energy in preparing useless papers,

is the psychological effect of causing individuals to give greater weight to the requisition, a shadow, than to the article itself, the substance.

Financiers are learning that there is a practical limit to the amount of work which can be effectively performed by a single office. There was a time when very small railways could be combined in a single working system with unquestioned advantage in administration. Long ago such combination passed the peak of efficiency. A decade ago the promoters of the new Rock Island Railway system acquired the Choctaw, Oklahoma and Gulf, which had its general offices at Little Rock, Arkansas. About the same time they also absorbed the Burlington, Cedar Rapids and Northern, a distinctively Iowa road with general offices at Cedar Rapids. Each of the roads mentioned, with something over a thousand miles of line, enjoyed a considerable degree of local popularity and, therefore, immunity from drastic legislation. The general officers of these roads had a distinct identity in Arkansas and Oklahoma in one case, and in Iowa in the other. When the citizens of these proud States awoke to the fact that the seats of authority

had been removed to far-off Chicago, that all purchasing had been centralized in that city, there was a feeling of resentment which necessarily had some bearing in shaping legislation hostile to corporations. To say that ties and timber cut in Arkansas can only be bought to advantage in Chicago is as ridiculous as it is expensive. In sharp contrast to this mistaken policy is the case of the prosperous Louisville and Nashville system, now financially associated with the Atlantic Coast Line. It is an open secret that the Louisville and Nashville controls the Nashville, Chattanooga and St. Louis Railway and the Georgia Railroad; and is a dominant factor in the Atlanta and West Point, which includes the Western Railway of Alabama. Each of the properties mentioned, however, is a distinct local entity with its president and full complement of general officers. It is said that not even are the mechanical appliances standardized as among these different roads. This is perhaps too extreme a condition, but it has at least the value of preventing an undue centralization of supplies and purchases.

The general trend of thought at present is to recognize the sociological element as

the most important feature of administration. To offset the local unpopularity of the Southern Pacific in California, some perhaps deserved but much undeserved, a president with large powers has recently been placed in San Francisco. Simultaneously four other presidents were elected for Omaha, Nebraska; Houston, Texas; Tucson, Arizona; and Portland, Oregon. Chairman Lovett has wisely placed upon the shoulders of these five presidents the duty of acquiring that local human touch which becomes more vital as civilization advances. Chairman Lovett and his five presidents now perform with some degree of comfort the duties which killed that great genius, Edward H. Harriman, who fell a victim to his own juggernaut of centralization.

One of the temptations to which mankind has yielded from the beginning is to seek perpetual motion in administrative, as well as in physical, affairs. The hope has been that by some hocus pocus of a constitution, a scheme of government, or a chart of organization, a self-perpetuating entity would be set going to govern internal affairs for an indefinite period. The sociologist sees that systems survive only as they reflect the prog-

ress of a people, whether that progress be in government, in administration, or in ability to become self-reliant. A phase of this general tendency is seen in the segregation of the storekeeping function for large corporations. When irregularities develop, when waste is discovered, when ignorance of materials and their conservation is manifest, the fallacious remedy usually proposed is to place this peculiar activity under the control of a special body of men expert in that one feature. The true function of the specialist and the expert, let it be repeated, is to show the layman how best to perform tasks of a general nature. When a separate department is created such specialization often becomes the lazy man's excuse for side-stepping responsibility. The true solution lies in patient instruction of those who are remiss, in such thorough, broadminded inspection as will insure maximum hearty effort for improvement. Because an artisan is clumsy or ignorant, his superiors should not take away his working tools until they have exhausted every known method of teaching him the trade or art. The Pennsylvania Railroad, whose organization was laid out by military men a half-century ago, has

never yielded to the temptation to create a separate supply department. It has, however, fallen into the mistake of centralizing its purchasing to the extent that a clerk in Philadelphia may discount the judgment of a superintendent in Baltimore or Washington. The Harriman Lines, after various segregations of the supply function, sometimes under the accounting department and sometimes as a separate branch of the operating department, have recently amalgamated supply under Operation by placing all division storekeepers under the respective division superintendents and by including store accounting in the division accounting bureaus. The effect has been to make the superintendent and his various assistants zealous conservers of store supplies, where previously they unconsciously sought to draw the greatest amounts possible from the store because it was in another department for which they had no responsibility. When the bandit really reforms he is an able police chief, a guardian of law and order.

The United States Navy has long had a bureau of supplies and accounts. The members of the pay corps were supposed to be interchangeable as pay officers and store-

keepers. This is sound organization and it is to be regretted that a movement is on foot looking to the segregation of supplies from accounts. Both logically and practically the two are closely interwoven. When the volume of business is small the same person can be both pay officer and storekeeper. When warranted by volume the duties can be segregated to advantage, not because of the inherent importance of either, but solely because there is more work than one man can do. Off-setting this mistaken agitation is the wholesome legislation proposed for amalgamating the pay corps of the Navy with the line. Ultimately, a generation hence, while every seagoing line officer will not be a paymaster, every paymaster will be a seagoing line officer, stripped of that class consciousness which is so fatal to composite efficiency.

Granted the premise that in all organization such ultimate consummation is desired, the conclusion is irresistible that supplies and purchases are but a component of operation, whether that operation be the maintenance of a really military navy, the manufacture of steel, or the running of great railroads.

LINE AND STAFF

CHAPTER VII

LINE AND STAFF

KNOWLEDGE is power. Knowledge of the principles governing line and staff in organization is often sadly lacking in the training of executive officers. The sins of ignorance are costly. No field of investigation will yield a larger return in efficiency than that of line and staff.

Line functions are those exercised in direct sequence through prescribed and definite channels of authoritative control. The first line officer had no staff because he had time to do both the acting and the thinking parts. As the activity grew in volume, the responsible line head found the necessity for expert advice. Perhaps this came from a lawyer, a surgeon, or an engineer. Whatever the source, there was no suggestion of turning over to the expert adviser the direction of the activity itself. In a less highly organized condition of society the distinction was easily maintained. The lawyer, the surgeon, or the engineer might have many

clients. This divided patronage rendered it manifestly impossible for the outsider to become responsible for direction of internal affairs. In the modern corporation it frequently happens that the amount of expert attention demanded will justify engaging the expert to devote his sole attention to the corporation in question. Then the trouble begins. Human nature is such that, unchecked, its ambition leads to meddlesome interference with specific matters beyond its immediate concern. The problem of organization is to impose such checks and balances that each component of the activity will maintain its proper proportion and relation to the others.

Staff as contra-distinguished from line originates in the necessity for maximum intellectual attention untrammelled by the demands of administrative routine. Here is a distinct differentiation of function. The officer absorbed in directing large affairs, in getting things done, is of the line. For the time being at least he is too busy to originate better methods or to seek the principles underlying his activities. He is the operator rather than the inventor; the actor rather than the playwright. Science and invention

add to the complexities of the art and force the necessity for expert assistance.

The old sailing masters had to be reinforced by engine experts when steam was applied to navigation. Fortunately, the law of the sea demands undivided control in the sailing master, and the marine engineer has always been subordinate to the captain of the ship. Until recently this subordination has been too intense. The marine engineer in a staff corps was out of line for promotion to the captaincy. Perhaps the chief engineer was twice as good a man as the first officer, and perhaps had double the service, but higher than a chief engineer he could not go. Since the splendid progressive amalgamation of the staff steam engineers of the United States Navy into the navigating line, the specialist in engineering finds no hatchway permanently battened between the engine room and the deck. Under the old order of things, there was before a strong man in the engine room a constant temptation to fortify himself behind the technique of his specialty at the possible expense of navigation itself. Now that he is a navigating officer, the direct purpose of the ship, namely navigation, is constantly most prominent.

Engine rooms exist to propel ships. Ships do not exist to contain engine rooms, except incidentally.

The recent *Titanic* disaster has called public attention to the failure to observe the old-time custom of developing all-round men at sea. There were not enough real sailors to man the life boats effectively, and stewards and stokers proved poor substitutes for sailors. This can be traced to the failure on the modern steamship to balance line and staff, to check over-specialization, and to remember that the ship, the whole, is greater than a department, one of its parts. The remedy does not lie necessarily in increasing the number of sailors as such, but rather in rotating stokers and others with sailing duties and rendering them available and more effective in time of need. This means more trouble for responsible heads, more work for officers in educating and training their men. Such increased work is what officers are for. Such constant incentive to endeavor prevents sluggishness and inaptitude for emergencies.

The first staff officer had no authority beyond that of polite inquiry. There was no one whom he could command. Gradually he

acquired an office force and assistants. Not satisfied with telling others how to do, he unconsciously began doing things himself. He thus became a line officer burdened with administrative routine precluding proper concentration on that thinking part which the staff officer was himself created to perform. The controversies between line and staff in the Army and Navy of the United States have cost our Government untold millions. Most of the railway and industrial corporations of the United States are wasting some money every day by permitting staff officers to attempt to exercise line functions. The Army and the Navy have found an effectual check by going back to first principles, by amalgamating staff and line, by judicially rotating function, and by substituting periodic details from the line for permanent appointments to the staff.

Such solution is so logical and so practical that it is attracting the attention of the railway and industrial world. As the subject receives the attention that it deserves, the practical application of the principles involved will be prompt and intelligent. So one-sided has been the training of executive officers that most of the so-called captains of

industry, narrowed by specialized training, must perforce consume much time in studying subjects previously outside their scrutiny.

Training leaves its marks. A lawyer, called to an executive position, often fails to see the necessity for the direct and ever-present sequence of authority. If all the judges of a city leave town for the week end, little harm may result. So unusual is an application out of regular hours for a writ of injunction or a writ of habeas corpus that the inconvenience of securing a judge would not be serious. Industrial concerns and railways, however, run every day in the week and every month in the year. There must ever be an alert and present incarnation of administrative authority. These administrators are like the firemen and the policemen of a city. There can be no haphazard, indefinite "take it up next week" method of procedure.

Constitutions of Governments follow scientific differentiation of function. The executive is a line function, continuous in effect and direct in action. The judicial is a staff function, more or less continuous in effect, and presumably operative not directly, but

through the executive function. The legislative is a staff function intermittent in action and indirect in the application of its conclusions. Frequently there is a departure from these scientific planes of cleavage and harm results.

Just at the present time the Federal courts are engaged in a futile effort to exercise the line functions of not only regulating but administering numerous great corporations. The fundamental defect is the same as exists in receiverships. When the court attempts administrative functions, there is no tribunal for judicial review of its own acts. As this principle is understood, receiverships will be supervised by some executive arm of the State, as is done in the case of banks both by the Federal Government and some of the State banking bureaus. Receiverships are seldom denied, for the reason that judges, being human, covet power. Were the receivership ordered by the judge to be conducted by someone else than himself, there would be greater probability of real judicial action on his part. No military commander of modern times has dared exercise the despotic authority that often characterizes a court in conducting a corporation receivership.

The staff function of greatest vital necessity is that of inspection or review. The tendency of inspection is that of extremes. Inspection reports often become perfunctory and colorless. On the other hand, they may be hypercritical and demoralizing. True inspection is as open as the day and as welcome as the evening. True inspection makes the persons inspected grateful for the inspection. The true inspector is so thorough in his training, so secure in his knowledge, so considerate of his subjects, so forgetful of himself, so devoted to his duty and so worthy of respect, that those whom he inspects pay the unconscious homage of admiration. Such men are rare, but they can be developed. Experience has proven that there are definite limits of time within which an officer can be assigned to staff inspection duty. Some return to the line is essential to retain that human touch with everyday requirements through which alone can the confidence of others be merited.

An important component of inspection is audit. As previously stated, accounting frequently attempts to do duty as auditing. This is another instance of failure to differentiate between line and staff. Accounting

is a line function, a part of operation. Auditing is a staff function, a part of comprehensive inspection.

All positions contain their characteristic tendencies and inherent temptations. The line officer, because he is practical and direct, is often impatient of staff suggestion, which he regards as fantastic and theoretical. Too often this prejudice is strengthened by the unfortunate mental attitude of the staff expert. Men who think out of and away from conventional grooves have usually a unique personality. Too often this is coupled with overbearing intolerance for their less gifted brethren. With personal eccentricities that are but manifestations of narrow selfishness, the cause of efficiency has had to struggle against the handicap of the unfortunate personal equations of some of its ablest exponents. Tactless, intolerant, and inconsiderate treatment of conscientious line officers has discredited many an honest staff expert. The true teacher makes his students love their work and respect him because the work is lovable and because his teachings are sound.

The best antidote for the undesirable condition mentioned is periodic service in the line. It rounds off the square corners and

bevels the sharp edges. The staff officer in turn is more valuable when fortified by actual line experience and accomplished results. It is always easier to tell the other fellow how than to do the thing oneself. The most successful man is he who has done both things, who has told and has done, who knows how and who also knows why.

Staff and line functions are often confused because of a loose use of the overworked word "staff." It is entirely possible for the same individual to act both in line and staff capacities. Several line officers at the head of distinct departments or groups of activity may collectively constitute the advisory staff of their common superior. Each of the nine heads of the executive departments of the United States Government in Washington is a line officer exercising direct authority over hundreds or thousands of subordinates. Assembled at the White House, the nine become collectively the President's Cabinet, a staff body. The weakness of this governmental organization is the absence of a chief of staff, in effect an assistant president. An attempt is made to supply this defect by having a secretary to the President at \$7,500 a year direct and co-ordinate for the President the

activities of nine strong Cabinet officers each rated at \$12,000 a year. The President of the United States is too busy a man to bring about complete co-ordination, and much goes by default. In recent months the handling of a delicate situation in Mexico has furnished numerous instances of a glaring lack of co-ordination between the State, Treasury, War and Navy Departments. This was the fault of a defective system rather than of individual shortcomings.

Evolution brings us back to first principles. In the first administration of George Washington, his Secretary of State, Thomas Jefferson, was, in effect, though not in name, prime minister and chief of staff. Foreign affairs were an incident of the State Department. Today the foreign affairs of a mighty nation absorb practically the entire activities of the State Department. It no longer serves as a balance wheel for the other departments. The remedy is to create a Department of Foreign Affairs under a secretary, a member of the Cabinet, and to restore to the State Department many of its original functions. The Secretary of State, in the same building with the President, would be the latter's assistant and chief of

staff. The Department of State would, as its name implies, be the department of departments, balancing and co-ordinating the other nine. One of its functions would be that of inspection, including audit and review. It would include a comptroller who would audit the Treasury Department. The anomalous condition of having the Treasury Department audited by its own comptroller would be eliminated. The position of secretary to the President would join the scrap heap of discarded organization.

The greatest boon to modern organization is the chief-of-staff idea, scientific in conception, practical in application, effective in result and as enduring as eternity itself.

THE GENESIS AND REVELATION OF
ORGANIZATION

CHAPTER VIII

THE GENESIS AND REVELATION OF ORGANIZATION

ORGANIZATION is a necessity and not an accident. Organization exists in response to some need of the social order. The type of organization adopted, however, is often accidental and frequently unscientific. There are so many more men who know how than there are who know why, that departures from sound principles should be expected, rather than otherwise.

The first type of organization encountered among all peoples is that of the family, well termed the unit of civilization. This organization is scientifically sound because based upon natural laws. The evolution of this organization is from polygamy to monogamy. At first, the family served all purposes of organization. As new generations came, as populations increased, the distinct limitations of the scope of the family organization necessitated a still larger unit, such as the tribe or the clan. Whenever precedents are lacking

any new organization is characterized by rule by the strongest. Thus it happens that despotism alone is able to hold together the more or less heterogeneous elements which have been grouped together to carry out an undertaking.

Gradually, as the component elements crystallize along more or less definite axes of activity, there come demands for protection in the enjoyment of positions attained. In government such demands eventually result in charters of liberty, in guarantees of protection to person and property, in constitutions written and unwritten, and in various other forms of checks and balances. Such organization should be scientific, since it is based upon the practical necessity of checking the natural caprice of those invested with authority and power. Governmental organization, however, is usually more scientific than practically effective. It accomplishes the general purposes in a highly satisfactory manner, but at an enormous and extravagant money cost. The inherent defect is the difficulty in checking the public official effectively, and at the same time leaving him a balance of initiative and defined responsibility. There is always the conscious or sub-con-

scious fear that the public official will become too powerful.

Government thus differs from other corporations in having its stock-holders, the citizens, holding back the duly constituted officers. In most other corporations the proposition is reversed. The stockholder is so fearful that the duly elected officers of the corporation will not produce maximum financial returns that he usually leaves such officers untrammelled and, perhaps, unchecked.

Here are two extremes between which must be fixed a more or less indefinable happy medium. That such medium is being scientifically sought is evidenced, on the one hand, by the growth of commission forms of government, and, on the other, by the increasing interest of stockholders and directors of large corporations in the performance of their officers. The student of organization as a science finds much cause for optimism in contemporaneous developments.

The casualist finds a world of chance in which accident and luck play the leading parts. The scientist, in whatever branch, including organization, finds a world of universal law with every recognized cause producing a corresponding effect. There is no

greater evidence of the advancement of mankind than its willingness to discuss subjects of every nature. Previous failures to consider organization as a science may be traced to the same fundamental misconception of individual rights and moral delicacy as has characterized consideration of the science of eugenics. Time is the best regulator of all great questions, because it permits the operation of the fundamental of all laws, that of supply and demand. Organization and eugenics are supplying a demand of a rapidly advancing world for a better grouping of better men and women.

Mankind is prone to mistake the shadow for the substance. Just at present the efficiency of the modern corporations is measurably decreased by the snap judgment of the financial centers upon too short periods of performance. This condition is reflected in weekly or monthly statements of gross earnings and of net earnings. Efficiency is judged by seeming ability to make a better showing than was made in a corresponding previous period. The result is that subordinate officers are tempted to strive for a paper showing rather than to conduct and conserve along the broadest lines the property en-

trusted to their charge. For example, the man in the street in New York may judge the efficiency of a western railway by the size of its trainload in a given month or year. Perhaps the apparently wonderful showing has been attained by excessive strain upon the motive power, shortening its life and reducing its ultimate earning capacity. Again, so insistent is the demand for satisfactory balances, periodically struck, that high corporate officers find it necessary arbitrarily to reduce working forces regardless of actual conditions. Vehement and imploring telegrams go from New York to outlying districts demanding reduction of expenses. The local official disbands some of his working forces, lets assembled material lie idle, knowing all the time that the ultimate cost will be greater because of the loss of efficiency in re-organizing his forces and resuming the work.

Apart from the economic loss involved is the sociological unrest engendered by treating men as pawns on a financial checkerboard. The offsetting argument of the modern banker is that even though it cost more money later on, it is better to wait until money is more plentiful. The observing citizen is quick to detect the fallacy of this rea-

soning and quicker to condemn a financial system that demands such departure from real efficiency. A refreshing exception to this general practice is shown by the Chicago & Northwestern Railway which, under the old-fashioned administration of Marvin Hughitt, has actually insisted upon increasing its equipment in dull times because labor and material are then cheaper.

Men are the product of their environment, and the coming captain of industry is the man whose conception of trusteeship will be that of a scientific buffer between the financial power on the one hand and the practical necessity of the property and its employees on the other. The labor unions have been quick to see the weakness and blindness of capital. The tyrannical hold of labor today is due more to unscientific methods of capital, to absent treatment by large interests from New York, than to the cupidity of labor itself. A concrete case is that unscientific unit of performance, the train mile, which leads to many unsound conclusions and expensive outlays in railway operation. So dependable is human nature, so sound is public opinion in the long run, so honest and so able is the corporation officer of today, that

the solution of these great questions will come through scientific study of the fundamental principles involved. Evolution will thus preclude the necessity for and prevent revolution.

It sometimes happens that human nature must be hurried to its conclusions. The greatest present need is an antidote for the unwillingness of men to profit by the previous experience of others. It would be amusing, were it not so expensive, to watch the gropings of many corporate officers for methods to test efficiency. Ignorant of fundamental principles, intolerant of outside suggestion, unable to detect the analogy in other undertakings, they repeat the expensive experiments of the past. Nearly every large corporation today is endeavoring to inaugurate some effective system of inspection or review. Nearly every one is falling short, because an attempt is made to have the cheap man check the work of the high-priced man. Nearly every one is disappointing its promoters, because of failure to differentiate between accounting, an operating or line function, and auditing, an inspection or staff function.

It often happens that what unfolds itself

as a discovery to one is but a matter of principle long previously enunciated by someone else. Among the ideas that are contemporaneously revealing themselves to searchers after truth is the principle that most modern undertakings are too large to be concentrated in one man, however able or zealous, because it is absolutely essential that authority shall converge in some one individual. The false idea has gained sway that such a man alone could act in numerous cases. The application of this idea necessitates minimizing the cases in which the head must himself act. By a process of evolution, the chief-of-staff idea has unfolded itself to relieve such head and, at the same time, provide comprehensive action for a greater number of cases.

Another concept that has forced its attention is that effective means must be provided for a comprehensive review of performance. The railway president cannot be left indefinitely to report upon his own performance. Granted this necessity, a fallacious attempt has been made to check the president through inanimate accounts, through reports prescribed by the Interstate Commerce Commission or other public bodies. It is now dawning upon those who are concerned how

inadequate is such a test. A more satisfactory remedy is the outside expert, the disinterested reviewer, who is qualified by training and experience to report upon men and things as well as upon papers and accounts; a man who can draw his conclusions from first-hand information on the ground rather than from second-hand data in the office.

Perhaps the greatest revelation of modern organization is the consciousness, tardy though its arrival, that there is a distinct limitation to the size of undertakings, that volume may be the determining condition. The operating activities of many corporations have outgrown a detailed direction from a central source. The self-suggesting remedy is a decentralization of detailed activity and a retention of centralized control. In many cases such efforts at decentralization are still very crude. It is hard to teach old dogs new tricks. Here again time and intelligent effort will supply the adjustment which the conditions demand.

Modern organization reveals to the student a far more pleasing picture than that beheld by the prophet of old. The religion of Fear, with its bottomless pit and lake of brimstone, has been replaced by a religion of

Love with its heights of hope and its valleys of peace. Modern requirements have brought men together in large masses. They have organized together for one purpose or another. Political and economic efficiency have long been their cherished desires. As weaknesses developed in this organization they have sought improvement. Sometimes the attempt was wise, sometimes foolish, often ineffectual, but nearly always sincere. Whenever the effort ran counter to the general welfare or to the normal advancement of mankind, the organization quickly showed the defect. Out of it all, as modern organization sweeps into the newer day of composite efficiency, comes the delightful realization that its beacon light is scientific and enlightened altruism.

THE END

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